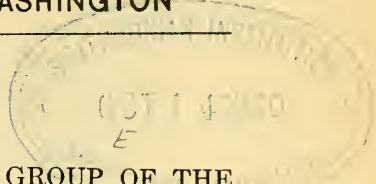


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SYNOPSIS OF THE CADAVERINUS GROUP OF THE
GENUS APHODIUS WITH DESCRIPTIONS OF
THREE NEW SPECIES (COLEOPTERA:
SCARABAEIDAE).

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The dung beetles comprising the so-called Cadaverinus Group of the genus *Aphodius* are very rare in collections, owing in part to the fact that the species are extremely local in distribution.

All but one of the species listed herein have been examined for wing length. The exception is *A. nevadensis* Horn, specimens of which were not available; but the wings of this species are said, however, to be greatly reduced. *A. oblongus* Say, *A. gravis* Fall, and *A. sparsus* Leconte are all fully winged; these species also have a rather long metasternum, and in these two characters are quite distinct from the other species now included in the group. Every other species treated in this paper has the wings vestigial (one-half to two-fifths of the length of the abdomen, and not as wide as the width of the hind tibiae) and the metasternum rather short (measured along the midline of the insect). This latter character has not been mentioned by other students of the group but appears to be of value since it definitely separates the fully winged from the vestigial-winged species. This is probably a direct correlation since many insects having vestigial wings possess reduced metasterna whereas their nearest-winged relatives may have well developed metasterna.

Several species here dealt with have been described rather recently as new, but no key to the group has yet been presented. The key has been purposely made fuller than usual, since some of the species are rather closely related and I wish to leave no doubt in the mind of the person using the key as to the identity of the specimens.

SYNOPTIC KEY TO THE SPECIES.

- 1. Base of thorax with a distinct and entire marginal line.....2
- Base of thorax without a marginal line, or if one is present
at middle, it is entirely lacking near the hind angles.....11

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2. (1) Apex of clypeus with distinct teeth.....3
 Apex of clypeus rounded or angulate, never with definite teeth.....4
3. (2) Punctures of elytral striae separated by about twice their diameters, intervals flat, sparsely and finely punctured; first segment of hind tarsus a little shorter than the following four segments combined. Average length 7 mm.
 Eastern.....*oblongus* Say
 Punctures of the striae usually separated by less than twice their diameters and coarser, the intervals flat, the puncturation fine but moderately dense; first segments of hind tarsus subequal to the following four in length.
 Western. Average length 9 mm.....*gravis* Fall
4. (2) Clypeus punctate but smooth, never granulate, at the most faintly rugose.....5
 Clypeus punctate and distinctly granulate or rugose.....9
5. (4) Base of thorax distinctly sinuate, sides not evenly arcuate; disc with very dense and extremely fine punctures, and, intermixed sparse, scattered, somewhat larger punctures, but none of the punctures coarse; elytra oblong, the humeri very indistinctly dentate; elytral striae finely and not closely punctate, the intervals flat and with very fine and hardly perceptible punctures; first segment of hind tarsis distinctly longer than the following three. Known to occur only in nest of the woodrat, *Neotoma*, in California and Oregon.....*sparsus* Leconte
 Base of thorax evenly rounded, not at all sinuate; other characters not as in *sparsus*.....6
6. (5) Apical third of lateral thoracic margin either distinctly or noticeably explanate; lateral margins sinuate or emarginate near basal angles; elytral humeri distinctly dentate; first segment of hind tarsus distinctly longer than the following three. Central and Southern California.....8
 Thorax not explanate anteriorly; lateral margins usually straight or nearly so; elytral humeri usually rounded, rarely faintly dentate; first segment of hind tarsus equal to or shorter than the following three. Northern California, Oregon and Washington.....7
7. (6) Thorax much narrower behind and neither sinuate nor emarginate near hind angles; disc with extremely minute punctures and also much larger but only moderately coarse and variolate punctures, the latter rather scattered; clypeus widely and shallowly emarginate, the angles rounded, the disc at most faintly rugose; elytra oblong, striae deep, with coarse punctures separated by two to three times their diameters, the intervals

faintly convex and with hardly discernible punctures; humeri not dentate. Length 6 mm. Known from Oregon, Washington and California.....*cibratulus* Schmidt
 Thorax but very little narrower behind, faintly sinuate near the hind angles; disc of thorax distinctly alutaceous and with only large and scattered punctures, finer intermixed punctures apparently lacking; punctures of the elytral striae very fine, humeri broadly rounded. Length 10 mm. Washington*pullmani*, new sp.

8. (6) Lateral thoracic margin very distinctly explanate in anterior half, in basal half very slightly bisinuate, with hardly noticeable but extremely fine punctures and moderately dense, somewhat coarse punctures intermixed; clypeus widely and very shallowly emarginate at apex, the angles broadly rounded; elytra ovate, striae fine and with fine punctures, the intervals flat, wide and with sparse and minute punctures; known only from Fort Tejon and the San Diego region of California.....*ovipennis* Leconte

Lateral thoracic margin but slightly explanate anteriorly, with but one emargination and that a distinct one just before the hind angles; disc with very minute punctures and also some extremely coarse and variolate, rather sparsely scattered punctures; clypeus widely and shallowly emarginate, the angles faintly indicated; elytra semiovate, striae fine and punctures somewhat coarser than in *ovipennis*, intervals flat and very minutely punctate. Known only from a limited area around the San Francisco Bay region of California (Lake and Alameda Counties).....*cadaverinus* Mannerheim

9. (4) Elytral humeri distinctly dentate; clypeal angles slightly angulate. Clypeus very rugose and granulate, apex very shallowly and not widely emarginate; thorax evenly arcuate laterally and a little narrowed behind; disc with both very minute punctures and moderately coarse and rather sparsely scattered punctures; elytra with striae fine, the punctures coarse, intervals slightly convex and with minute punctures. Central California (San Francisco to Placer County).....*gentilis* Horn

Elytral humeri not dentate; clypeal angles broadly rounded. Oregon and Washington.....10

10. (9) Thorax hardly narrowed behind; body robust and not at all constricted between elytra and thorax, elytra rounded apically. Clypeus slightly rugose, emargination very broad and shallow, angles very much rounded; thorax nearly quadrate in shape, disc with minute punctures sparsely scattered and coarse, variolate punctures intermixed, the latter closer together at sides; elytral striae

fine, sparsely punctate, intervals flat and with minute punctures. Length 7-8 mm. Oregon.....*dilaticollis* Saylor
 Thorax gradually and noticeably narrowed behind, body more elongate and elytra much more pointed apically; body distinctly constricted between base of elytra and thorax. Clypeus coarsely rugose, very broadly and not deeply emarginate, the angles rounded; thoracic disc with minute punctures and coarse, variolate, irregularly scattered, moderately dense punctures; elytral striae fine, with fine punctures, intervals flat, broad and with minute punctures; apical tooth of front tibia abruptly truncate (? sexual). Length 10.5 mm. Oregon.....
caseyi, new species

11. (1) Apex of clypeus with two teeth or none; thorax narrowed at base or not.....12
 Apex of clypeus with four teeth, the thorax very greatly narrowed basally. Clypeus with the central two teeth widely separated by a shallow emargination, the lateral teeth much smaller and also separated by an emargination from each of the larger teeth, clypeus very coarsely granulate. Thorax with the sides evenly arcuately rounded, the disc very densely and entirely punctured with fine and coarse punctures intermixed; elytral humeri not dentate, striae very fine and with fine punctures, intervals flat with dense and fine but quite obvious punctures. Known from Nevada and California.....
pyriformis Brown
12. (11) Clypeal apex with two teeth.....13
 Clypeal apex rounded, at most faintly angulate.....14
13. (12) Thorax subquadrate, sides slightly arcuate and narrowed behind, the hind angles distinct but rounded, base slightly arcuate; elytra oblong, a third longer than broad. Lassen, Sierra and Siskiyou Counties, California.....
martini Van Dyke
 Thorax with sides gradually rounded into base, the hind angles almost obliterated, base arcuate; elytra oblong-oval, not a third longer than broad. (Specimens not examined.) Western Nevada.....*nevadensis* Horn
14. (12) Thorax narrowed basally, disc with two types of punctures, very fine and rather coarse; base usually with a marginal line at least at middle.....15
 Thorax quadrate, with no trace of basal marginal line, surface alutaceous, with not more than a dozen large variolate punctures on the disc and no trace of fine punctures, the punctures moderately dense along the lateral margin; clypeus granulate, its apex very widely but not deeply emarginate, the angles broadly rounded; elytral

striae very fine, the punctures hardly obvious, the intervals flat, with extremely minute punctures. Washington.

lanei, new species

15. (14) Elytra oblong-oval, hardly narrowed basally, puncturation at intervals very distinct. Clypeus very granulate, apex widely not deeply emarginate, the angles narrowly rounded, vertex very densely punctate with coarse and fine punctures intermixed. Thoracic disc with fine punctures, and with moderately coarse, scattered, and variolate punctures, the latter denser at sides; basal line obvious only at middle. Elytra with fine striae, the puncturation very fine and not dense, intervals flat and the moderately dense punctures very obvious. Washington.....

washluca Robinson

Elytra much more oval and narrowed basally, puncturation of intervals not unusually distinct. Clypeus coarsely granulate, apex narrowly rounded, vertex densely punctate. Thoracic disc with very minute punctures and also with extremely coarse and variolate punctures, the latter irregularly but moderately densely distributed; basal marginal line distinct only at middle. Elytra with fine striae, the punctures fine and sparse, intervals flat and with very minute and inconspicuous punctures.

Central California.....*rugodypeus* Hinton

***Aphodius lanei*, new species.**

Elongate, robust, piceocastaneous above. Clypeus very widely and moderately-deeply emarginate, the angles narrowly rounded; genae obtusely rounded; disc with very fine punctures, the apical three-fifths rugose and subgranulate; vertex with fine punctures intermixed with only a few slightly larger punctures on each side (there is much less difference in size between these two types of punctures than in most species). Thorax quadrate, sides nearly parallel, not narrowed behind, entire base not margined; disc alutaceous, impunctate except for a dozen highly scattered and very coarse punctures, these closest at sides (no really fine punctures, as common in most species in the group, are visible). Elytra with rounded humeri; striae fine and the intervals faintly convex, the punctures of both hardly obvious. First segment of the hind tarsus equal to the following three in length; bristles of the posterior tibial apex apparently unequal. Mesosternum slightly carinate between the coxae. Front tibia with the apical tooth bluntly truncate at apex, the inner spur curved apically. Wings vestigial, represented by a membranous piece narrower than the hind tibia and only one-third the length of the abdomen. Length 9 mm. Width 4.5 mm.

The unique *Holotype* is in the United States National Museum (#54080), and bears the data: "Blue Mts., Godman Spr., Washington, 6,000 feet elevation, July 7, 1929. M. C. Lane, collector."

Aphodius caseyi, new species.

Elongate, body definitely constricted between the elytra and thorax, elytra rather pointed apically, giving the body a pointed aspect posteriorly. Color piceous, shining. Clypeus with a moderately deep and wide emargination, the angles narrowly rounded; genae nearly rectangular; disc with very fine and dense punctures, apical half very coarsely rugose and slightly granulate; vertex with large and small intermixed punctures. Thorax with entire and strongly marked basal line, sides nearly evenly arcuate but distinctly narrowed behind; disc with very fine and dense punctures, intermixed with very coarse and variolate, irregularly but rather sparsely scattered punctures. Elytra with humeri rounded; striae fine and with fine and relatively sparse punctures; intervals flat, with very fine and regularly placed punctures. First segment of the hind tarsus equal to the next three combined. Apex of hind tibia rather worn, but the bristles apparently equal. Mesosternum carinate between the coxae. Front tibia not worn, the apical tooth bluntly truncate at apex, the inner spur curved apically (? sexual character). Wings vestigial, being represented by a very narrow membrane one-third the length of the abdomen and narrower than the width of the hind tibiae. Length 10 mm. Width 4.5 mm.

The unique male *Holotype* is in the Casey collection at the United States National Museum (#54081) and is from Oregon.

Aphodius pullmani, new species.

Elongate, robust, castaneopiceous. Clypeus with a broad, moderately deep emargination, the angles narrowly rounded; genae rectangular; disc entirely and regularly punctate, with very fine punctures of one size only, the apex very faintly rugose; vertex with fine punctures as on clypeus and also a group of larger punctures near each side. Thorax broad and nearly quadrate in shape, with complete and well-marked basal margin, the sides but little narrowed behind, very faintly sinuate near the hind angles: disc alutaceous without the usual very fine punctures, the only punctures being coarse and variolate and only sparsely and very irregularly scattered on the disc, but a little closer together at sides. Elytral humeri rounded; striae fine, with fine, sparse and not at all obvious punctures, the intervals slightly convex and with extremely fine, hardly discernible punctures. First segment of the hind tarsus equal to the next three in length. Bristles at the apex of the hind tibia apparently unequal. Mesosternum slightly carinate between the coxae. Front tibia worn; inner spur stout and curved apically. Wings vestigial, about two-fifths the length of the abdomen and narrower than the width of the hind tibia. Length 10 mm. Width 4.6 mm.

The unique *Holotype* is in the United States National Museum (54082) from "Pullman, Washington, on snow, November 28, 1918, C. V. Piper."